

RENEWABLE ENERGY AND ENERGY EFFICIENCY
TECHNOLOGY COMPETITIVENESS ACT OF 1988

SEPTEMBER 22 (legislative day, SEPTEMBER 7), 1988.—Ordered to be printed

Mr. JOHNSTON, from the Committee on Energy and Natural Resources, submitted the following

REPORT

[To accompany S. 1554]

The Committee on Energy and Natural Resources, to which was referred the bill, S. 1554, to provide Federal assistance and leadership to a program of research, development, and demonstration of renewable energy and energy conservation technologies, and for other purposes, having considered the same, reports favorably thereon with an amendment to the text and an amendment to the title and recommends that the bill, as amended, do pass.

The amendments are as follows:

1. Strike out all after the enacting clause and insert in lieu thereof the following:

That this Act may be cited as the "Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1988".

SEC. 2. FINDINGS AND PURPOSE.

(a) FINDINGS.—Congress finds that—

(1) a secure and diverse supply of energy is in the Nation's best interest, and it is appropriate for the Federal government to sponsor a balanced program of energy research and energy technology development and demonstration to insure diverse supplies of energy by the year 2000;

(2) a strategic plan to pursue a program that balances Federal investments among energy supply and technology options is needed to assure that a well-managed, cost-effective research, development, and demonstration program will be implemented;

(3) renewable energy resources and energy efficiency technologies can make the energy sources of the United States secure and diverse with minimal environmental risks;

(4) the development and use of renewable energy and energy efficiency technologies can significantly reduce U.S. dependence on foreign energy sources; however, the extent of such contribution is dependent upon increasing efficiencies and reducing costs of renewable energy and energy efficiency technologies;

(5) the technological lead of U.S. firms and their capability to compete with foreign renewable energy and energy efficiency technology has declined in recent years, and many foreign firms are selling renewable energy and energy efficiency technology in the United States;

(6) competitiveness of U.S. firms overseas depends in part on long-term, stable Federal support of research and development efforts to maintain U.S. preeminence in technology; it is appropriate for the Federal government to support nearer-term commercial and proof-of-concept demonstrations so that U.S. firms will have not only technology, but also products to market;

(7) the development and export of renewable energy and energy efficiency products and technology can contribute positively to the balance of trade; and

(8) the volatility of world energy markets underscores the need for sustained levels of support for the research and development of renewable energy and energy efficiency technologies.

(b) **PURPOSE.**—It is the purpose of this Act to direct the Secretary of Energy, acting in accordance with authority contained in the Federal Nonnuclear Energy Research and Development Policy Act of 1974 (42 U.S.C. 5901-5920) and other law applicable to the Secretary, to pursue an aggressive national program of research, development, and demonstration of renewable energy and energy efficiency technologies in order to ensure a stable and secure future energy supply by—

(1) providing a long-term stable environment for renewable energy and energy efficiency technology research and development activities through the establishment of long-term goals and multi-year funding levels;

(2) directing the Secretary to undertake initiatives to hasten the commercialization in the near term of renewable energy and energy efficiency technologies; and

(3) fostering collaborative research and development efforts involving the private sector through government support of a vigorous program of innovative joint research and development venture projects.

SEC. 3. DEFINITIONS.

As used in this Act the term—

(1) "Secretary" means the Secretary of Energy; and

(2) "joint research and development venture" means a joint research and development venture under the National Cooperative Research Act of 1984 (98 Stat. 1815).

SEC. 4. NATIONAL GOALS AND MULTI-YEAR FUNDING FOR FEDERAL WIND, PHOTOVOLTAICS AND SOLAR THERMAL PROGRAMS.

(a) **NATIONAL GOALS.**—The following are declared to be the national goals for the wind, photovoltaics and solar thermal energy programs currently being carried out by the Secretary under existing law:

(1) **WIND.**—(A) In general, the goals for the Wind Energy Research Program include improving design methodologies and developing more reliable and efficient wind turbines to increase the cost competitiveness of wind energy. Research efforts shall emphasize—

(i) activities that address near-term technical problems and permit exploitation of current market opportunities of the wind energy industry;

(ii) developing advanced airfoils and variable speed generators to increase wind turbine output and reduce maintenance costs by decreasing structural stress and fatigue;

(iii) increasing the basic knowledge of aerodynamics, structural dynamics, fatigue and electrical systems interactions as applied to current wind energy technology; and

(iv) improving the compatibility of electricity produced from windfarms with conventional utility needs.

(B) Specific goals for the Wind Energy Research Program shall be to—

(i) reduce average wind energy costs to 3 to 5 cents per kilowatt hour by 1995;

(ii) reduce capital costs of new wind energy systems to \$500 to \$750 per kilowatt of installed capacity by 1995;

(iii) increase installed wind generating capacity to 4000 to 8000 megawatts by 1995;

(iv) reduce operation and maintenance costs for wind energy systems to less than 1.0 cents per kilowatt hour by 2000; and

(v) increase capacity factors for new wind energy systems to 25 to 30 percent by 1995.

(2) **PHOTOVOLTAICS.**—(A) In general, the goals of the Photovoltaic Energy Systems Program shall include improving the reliability and conversion efficiencies and lowering the costs of photovoltaic conversion. Research efforts shall emphasize advancements in the performance, stability and durability of photovoltaic materials.

(B) Specific goals of the Photovoltaic Energy Systems Program shall be to—

- (i) improve operational reliability of photovoltaic modules to 30 years by 1995;
- (ii) increase photovoltaic conversion efficiency of new photovoltaic amorphous silicon modules to 15 percent by 1995;
- (iii) decrease new photovoltaic module direct manufacturing costs to \$800 per kilowatt by 1995; and
- (iv) increase installed capacity of photovoltaic electric power production capacity to 100 to 200 megawatts by 1991.

(3) **SOLAR THERMAL.**—(A) In general, the goal of the Solar Thermal Energy Systems Program shall be to advance research and development to a point where solar thermal technology is cost-competitive with conventional energy sources and to promote the integration of this technology into the production of industrial process heat and the conventional utility network. Research and development shall emphasize development of a thermal storage technology to provide capacity for shifting powers to periods of demand when full insolation is not available; improvement in receivers, energy conversion devices, and innovative concentrators using stretch membranes, lenses and other materials; and exploration of advanced manufacturing techniques.

(B) Specific goals of the Solar Thermal Energy Systems Program shall be to—

- (i) reduce solar thermal costs for industrial process heat to \$9 per million Btu; and
- (ii) reduce average solar thermal costs for electricity to 4 to 5 cents per kilowatt hour.

(4) The President's budget request for fiscal year 1991 shall contain the Secretary's recommendations for specific cost, installed capacity, and other pertinent goals for 1995 for Department of Energy research, development, and demonstration programs in Biofuels Energy System, Solar Buildings Energy Systems, Ocean Energy Systems and Geothermal Energy.

(b) **AUTHORIZATION.**—There is authorized to be appropriated to the Secretary—

(1) for the Wind Energy Research Program, an amount not to exceed \$19,000,000 in fiscal year 1990; \$22,000,000 in fiscal year 1991; and \$26,000,000 in fiscal year 1992;

(2) for the Photovoltaic Energy Systems Program, an amount not to exceed \$43,100,000 in fiscal year 1990; \$45,000,000 in fiscal year 1991; and \$50,000,000 in fiscal year 1992;

(3) for the Solar Thermal Energy Systems Program, an amount not to exceed \$28,700,000 in fiscal year 1990; \$32,000,000 in fiscal year 1991; and \$35,000,000 in fiscal year 1992;

(4) for the Biofuels Energy Systems Program, an amount not to exceed \$32,100,000 in fiscal year 1990; \$35,100,000 in fiscal year 1991; and \$40,000,000 in fiscal year 1992;

(5) for the Solar Buildings Energy Systems Program, an amount not to exceed \$8,000,000 in fiscal year 1990; \$9,000,000 in fiscal year 1991; and \$10,000,000 in fiscal year 1992;

(6) for the Ocean Energy Systems Program, an amount not to exceed \$5,000,000 in fiscal year 1990; \$5,000,000 in fiscal year 1991; and \$5,000,000 in fiscal year 1992; and

(7) for the Geothermal Program, an amount not to exceed \$34,900,000 in fiscal year 1990; \$38,700,000 in fiscal year 1991; and \$35,700,000 in fiscal year 1992.

(c) **PROJECTS.**—(1) The President's budget request for fiscal year 1992 shall include the Secretary's recommendations for at least one proposed proof-of-concept or near-commercial demonstration project in each of the categories represented by paragraphs (1), (2) and (3) of subsection (b). Each proposed project shall be described in sufficient detail to support congressional authorization and solicitation of bids for construction of necessary facilities.

(2) A list and description of alternative project plans under this subsection shall be submitted in President's fiscal year 1991 budget request. Such plans shall require funding or in-kind contributions from private sources in support of up to fifty percent of total project costs.

(3) In selecting projects under this subsection, the Secretary shall take into account the extent to which such projects will contribute to earlier commercialization

of key technologies within such categories than might occur without Federal support under this subsection and the extent to which such projects will contribute to the competitiveness of U.S. firms engaged in trade in renewable energy technologies.

(d) **REPORT ON OPTIONS.**—On or before May 1, 1991, the Secretary shall submit to Congress a report analyzing options available to the Secretary under existing law to accelerate the timely commercialization of wind, photovoltaic, solar thermal, bio-fuels, biomass, solar buildings, ocean and geothermal renewable energy technologies through emphasis on development and demonstration assistance to specific technologies in the research, development, and demonstration programs of the Department of Energy that are near commercial application.

(e) **AMENDED GOALS.**—Whenever the Secretary determines that any of the goals established under this section is no longer appropriate, he shall notify Congress of the reason for the determination and provide an amended goal that is consistent with the purposes of this Act.

SEC. 5. ENERGY EFFICIENCY RESEARCH AND DEVELOPMENT.

(a) **NEW INITIATIVES.**—The President's budget request for fiscal years 1991 and 1992 shall include the Secretary's recommendations of amounts to be set aside for new initiatives in energy efficiency research, development, and demonstration. Funds made available for new initiatives shall supplement and not supplant funds available to complete on-going energy efficiency research, development, and demonstration projects supported in whole or in part by the Secretary during fiscal year 1990. Funds made available for new initiatives shall be used by the Secretary to support the most promising and deserving new ideas in energy efficiency research, development, and demonstration brought to the attention of the Secretary during the previous fiscal year.

(b) **AUTHORIZATIONS.**—

(1) **FISCAL YEAR 1990.**—There is hereby authorized to be appropriated to the Secretary for the energy efficiency research, development, and demonstration programs of the Secretary, an amount not to exceed \$187,137,000 in fiscal year 1990, of which \$20,250,000 shall be available for new initiatives, as set forth below:

(A) for transportation energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$58,200,000, of which \$3,200,000 shall be made available for new initiatives;

(B) for industrial energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$42,300,000, of which \$5,800,000 shall be available for new initiatives;

(C) for buildings and community systems energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$51,975,000, of which \$9,250,000 shall be available for new initiatives;

(D) for multi-sector energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$33,000,000, of which \$2,000,000 shall be available for new initiatives;

(E) for energy efficiency research, development, and demonstration policy and management, there is authorized to be appropriated to the Secretary an amount not to exceed \$1,662,000.

(2) **FISCAL YEAR 1991.**—There is hereby authorized to be appropriated to the Secretary for the energy efficiency research, development, and demonstration programs of the Secretary, an amount not to exceed \$201,403,000 in fiscal year 1991, of which \$6,000,000 shall be available for new initiatives, as set forth below:

(A) for transportation energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$63,200,000, of which \$2,000,000 shall be made available for new initiatives;

(B) for industrial energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$45,000,000 of which \$1,000,000 shall be available for new initiatives;

(C) for buildings and community systems energy efficiency research, development, and demonstration, there is authorized to be appropriated to the

Secretary an amount not to exceed \$55,775,000, of which \$2,000,000 shall be available for new initiatives.

(D) for multi-sector energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$35,700,000, of which \$1,000,000 shall be available for new initiatives; and

(E) for energy efficiency research, development, and demonstration policy and management, there is authorized to be appropriated to the Secretary an amount not to exceed \$1,728,000.

(3) FISCAL YEAR 1992.—There is hereby authorized to be appropriated to the Secretary for the energy efficiency research, development, and demonstration programs of the Secretary, an amount not to exceed \$209,147,000 in fiscal year 1992, of which \$6,000,000 shall be available for new initiatives, as set forth below:

(A) For transportation energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$65,460,000, of which \$2,000,000 shall be made available for new initiatives;

(B) for industrial energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$46,740,000, of which \$1,000,000 shall be available for new initiatives;

(C) for buildings and community systems energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$58,100,000, of which \$2,000,000 shall be available for new initiatives;

(D) for multi-sector energy efficiency research, development, and demonstration, there is authorized to be appropriated to the Secretary an amount not to exceed \$37,050,000, of which \$1,000,000 shall be available for new initiatives; and

(E) for energy efficiency research, development, and demonstration policy and management, there is authorized to be appropriated to the Secretary an amount not to exceed \$1,797,000.

SEC. 6. JOINT RESEARCH AND DEVELOPMENT VENTURES.

(a) FINDINGS AND PURPOSE.—

(1) FINDINGS.—For purposes of this section, Congress finds that joint research and development ventures can—

(A) improve coordination in technology development among firms in industries attempting to commercialize renewable energy and energy efficiency technologies;

(B) assist in setting national standards to improve the operation of markets for these technologies; and

(C) enhance the ability of domestic firms to compete with foreign enterprises in sales of renewable energy and energy efficiency technologies.

(2) PURPOSE.—The purpose of this section is to direct the Secretary of Energy to make use of joint research and development ventures to further commercialization of renewable energy and energy efficiency technologies.

(b) ESTABLISHMENT.—(1) The Secretary shall establish six joint research and development ventures in accordance with the provisions of this section. Each joint research and development venture under this section shall include manufacturing firms, investors, an advisory committee appointed in accordance with this section, and such other participation as the Secretary deems appropriate to achieve the purposes of this section. Any facilities constructed under this section shall be located in the United States, Puerto Rico, the Virgin Islands, or the territories and possessions of the United States.

(2) The Secretary shall establish at least one joint research and development venture in accordance with subsection (c) to develop technology and expertise in each of the following areas—

(A) photovoltaics technology;

(B) wind energy technology;

(C) solar thermal technology;

(D) factory-made housing;

(E) advanced district cooling technology; and

(F) renewable energy and energy efficiency technology exports.

(3) Not later than 180 days after the date of the enactment of this section the Secretary shall publish plans to implement this section and report to Congress on such plans.

(c) VENTURES.—

(1) PHOTOVOLTAICS TECHNOLOGY.—(A) The Secretary shall establish and provide financial assistance to a joint research and development venture for the development of high-efficiency thermal and electrical distribution, storage, and end-use systems employing electricity from photovoltaic conversion of solar energy that may be deployed in remote or rural areas, including villages in developing countries.

(B) The purpose of the venture under subparagraph (A) shall be to design, test and demonstrate an integrated, cost efficient energy system, including components for electrical and thermal production, conversion, distribution, storage, and use under electronic control.

(C) Subsystems of the energy system under this paragraph may include—

- (i) advanced photovoltaic concentrators or other photovoltaic arrays;
- (ii) an electronically-controlled electrical system;
- (iii) a potable water desalination system employing multistage flash distillation technology; and
- (iv) a small scale refrigeration system employing a low-temperature chiller driven by waste heat from the village energy system or by photovoltaic arrays.

(D) The Secretary shall appoint members to an Advisory Committee on Photovoltaic Village Energy Systems to assist the Secretary in carrying out his responsibilities with respect to the joint venture under this paragraph. Such committee shall include at least one member representing each of the following—

- (i) firms in the photovoltaic manufacturing industry;
- (ii) the Secretary of Commerce;
- (iii) the Director of the Agency for International Development;
- (iv) the Director of the Export-Import Bank;
- (v) the Electric Power Research Institute;
- (vi) the Solar Energy Research Institute; and
- (vii) such other groups or institutions as the Secretary deems appropriate.

(E) There is authorized to be appropriated to the Secretary a total of not more than \$1,200,000 for each of the fiscal years 1990, 1991 and 1992 to carry out the purposes of this paragraph.

(2) WIND ENERGY TECHNOLOGY.—(A) The Secretary shall establish and provide financial assistance to a joint research and development venture for the development of high-efficiency thermal and electrical distribution, storage, and end-use systems employing wind-diesel systems designed for use where diesel generation of electricity currently is being used at a remote or rural site with significant wind energy potential.

(B) The purpose of the venture under subparagraph (A) shall be to design, test and demonstrate an integrated, cost-efficient wind-diesel energy system including components for electrical and thermal production, conversion, distribution, storage and use under electronic control.

(C) Subsystems of the energy system under this paragraph may include—

- (i) a diesel generator operating in conjunction with one or more wind turbines;
- (ii) an electronically-controlled electrical system;
- (iii) a potable water desalination system employing multistage flash distillation technology; and
- (iv) a small scale refrigeration system employing a low-temperature chiller driven by excess wind generated energy or a combination of wind-generated and diesel-generated energy.

(D) The Secretary shall appoint members to an Advisory Committee on Wind Energy Village Energy Systems to assist the Secretary in carrying out his responsibilities with respect to the joint venture under this paragraph. Such committee shall include at least one member representing each of the following—

- (i) firms in the wind energy equipment manufacturing industry;
- (ii) the Secretary of Commerce;
- (iii) the Director of the Agency for International Development;
- (iv) the Director of the Export-Import Bank;
- (v) the Electric Power Research Institute;
- (vi) the Solar Energy Research Institute; and
- (vii) such other groups or institutions as the Secretary deems appropriate.

(E) There is authorized to be appropriated to the Secretary a total of not more than \$1,200,000 for each of the fiscal years 1990, 1991 and 1992 to carry out the purposes of this paragraph.

(3) **SOLAR THERMAL TECHNOLOGY.**—(A) The Secretary shall establish and provide financial assistance to a joint research and development venture for the efficient use of solar thermal energy deployed in planned communities in the United States and overseas as a total energy system for the supply of electricity, industrial energy, potable water, refrigeration, and community heating and cooling needs, and the treatment of community-generated wastes.

(B) The purpose of the venture under paragraph (A) shall be to design, test and demonstrate an integrated, cost-effective community total energy system including components for thermal production, conversion, distribution, storage, and use under automated control.

(C) Subsystems of the community total energy system under this paragraph may include—

- (i) advanced solar thermal concentrators;
- (ii) a potable water desalination system employing advanced thermal distillation technology;
- (iii) an automated energy distribution and control system;
- (iv) a thermally-driven solar refrigeration system; and
- (v) advanced waste treatment systems using thermal energy or direct concentrated solar flux.

(D) The Secretary shall appoint members to an Advisory Committee on Solar Thermal Community Total Energy Systems to assist the Secretary in carrying out his responsibilities with respect to the joint venture representing each of the following—

- (i) firms in the solar thermal manufacturing industry;
- (ii) the Secretary of Commerce;
- (iii) the Director of the Agency for International Development;
- (iv) the Director of the Export-Import Bank;
- (v) the Electric Power Research Institute;
- (vi) the Gas Research Institute;
- (vii) the Solar Energy Research Institute; and
- (ix) such other groups or institutions as the Secretary deems appropriate.

(E) There is authorized to be appropriated to the Secretary a total of not more than \$900,000 for each of the fiscal years 1990 through 1992 to carry out the purposes of this paragraph.

(4) **FACTORY MADE HOUSING.**—(A) For purposes of this paragraph Congress finds that—

- (i) the United States is moving toward the industrialization of home building;
- (ii) ninety percent of new homes have factory-made components and over 400,000 of the approximately 2,000,000 homes built each year are largely factory-made;
- (iii) the United States is facing competition from foreign home builders who make use of factory-made housing techniques;
- (iv) foreign firms have begun to penetrate United States markets for homes and housing-related products, while United States exports in these categories have stagnated;
- (v) housing construction and materials comprises 21 percent of the Gross National Product;
- (vi) the Office of Technology Assessment has found that the technological innovations that could improve the quality and reduce the cost of housing in the United States are being needlessly slowed by inadequate research and development;
- (vii) the Department of Commerce has warned that foreign competitors have targeted the United States market for residential construction in the same way that domestic markets for automobiles and steel have been targeted in the past; and

(viii) a joint research and development venture supported in part by the Federal government is needed to assist the United States home building industry in competing with housing products and technology from overseas.

(B) The Secretary shall establish and provide financial assistance to a joint research and development venture with such specialized private firms and investors as the Secretary deems appropriate in order to establish at least three regional centers to develop techniques to improve the energy performance of factory-made housing offered by United States firms. In locating the regional

centers under this paragraph, the Secretary shall consider regional differences in housing needs, housing design, construction technique, marketing practices, and construction materials.

(C) The regional centers under this paragraph shall carry out research, development, and demonstration efforts to improve the quality, energy efficiency, and adaptability to renewable forms of energy of factory-made housing offered for sale in the United States and the productivity and energy efficiency of the housing construction process. The research, development, and demonstration programs at these centers shall consider housing design, fabrication, delivery systems, construction processes, marketing, and product export.

(D) The research, development, and demonstration strategy under this paragraph shall be guided by—

- (i) a detailed characterization of the needs of the home building industry;
- (ii) a close working relationship with all sectors of the home building industry; and
- (iii) coordination among the centers to pool and conserve resources.

(E) The Secretary shall appoint members to an Advisory Committee on Energy Performance in Factory-Made Housing to assist the Secretary in carrying out his responsibilities with respect to the joint research and development venture established under this paragraph. Such committee shall include at least one member representing each of the following—

- (i) the Secretary of Housing and Urban Development;
- (ii) the Secretary of Commerce;
- (iii) the National Institute of Building Sciences;
- (iv) the National Association of Home Builders;
- (v) the National Laboratories of the Department of Energy;
- (vi) the National Bureau of Standards; and
- (vii) such other groups or institutions as the Secretary deems appropriate.

(F) There is authorized to be appropriated to the Secretary a total of not more than \$10,000,000 for each of the fiscal years 1990 through 1992 to carry out the purposes of this paragraph.

(5) **ADVANCED DISTRICT COOLING TECHNOLOGY.**—(A) The Secretary shall establish and provide financial assistance to a joint research and development venture with such specialized private firms and investors as the Secretary deems appropriate in order to develop advanced district cooling technologies that are applicable in cities with high cooling loads.

(B) The joint research and development venture under this paragraph shall—

- (i) develop technical strategies for decreasing the capital cost and increasing the energy efficiency of major district heating and cooling system components;
- (ii) encourage the use of cogeneration and renewable energy technologies in district heating and cooling; and
- (iii) assist in transfer of district heating and cooling technology to local governments.

(C) The Secretary shall select three cities for application of advanced district cooling technologies developed by the joint venture under this paragraph. The activities to be carried out in such application shall include district cooling assessment, feasibility, and engineering design studies.

(D) The Secretary shall appoint members to an Advisory Committee on Advanced District Cooling Technology to assist the Secretary in carrying out his responsibilities with respect to the joint research and development venture under this paragraph. Such Committee shall include at least one member representing each of the following—

- (i) the Secretary of Housing and Urban Development;
- (ii) the Secretary of Commerce;
- (iii) firms manufacturing district cooling equipment;
- (iv) the National League of Cities; and
- (v) such other groups or institutions as the Secretary deems appropriate.

(E) There is authorized to be appropriated for each of the fiscal years 1990 through 1992 not more than \$1,000,000 per year to carry out the purposes of this paragraph.

(6) **EXPORT TECHNOLOGY PROJECTS.**—For purposes of this paragraph Congress finds that—

- (i) the United States has several advanced energy efficiency and renewable energy technologies that lack only sufficient coordination, support, and emphasis to become important export items capable of reducing the United States' trade deficit;

(ii) a major barrier to export of energy efficiency and renewable energy technology is the lack of information on overseas markets and technology development by foreign competitors;

(iii) the industry that markets energy efficiency technology is highly fragmented, and the renewable energy industry is comprised of small firms that lack the necessary resources to identify and target overseas markets and;

(iv) a joint research and development venture is needed to bring together a broad array of manufacturing firms, financial institutions, and Federal agencies to identify and develop promising technologies and export markets for energy efficiency and renewable energy technologies.

(B) The Secretary shall establish and provide financial assistance to a joint research and development venture with such specialized private firms and investors as the Secretary determines appropriate for the purpose of improving energy efficiency and renewable energy manufacturing processes in order to enhance product reliability and cost competitiveness relative to foreign-made products. The joint venture under this paragraph shall be coordinated with research, assessment, and targeting of foreign markets for energy efficiency and renewable energy products.

(C) The Secretary shall appoint members to an Advisory Committee on Energy Conservation and Renewable Energy Technology Exports to assist the Secretary in carrying out his responsibilities with respect to the joint research and development venture under this paragraph. Such committee shall include at least one member representing each of the following—

(i) the Secretary of Commerce;

(ii) the Director of the Agency for International Development;

(iii) the Director of the Export-Import Bank;

(iv) the United States Export Council for Renewable Energy;

(v) the National Laboratories of the Department of Energy; and

(vi) such other groups or institutions as the Secretary deems appropriate.

(D) There is authorized to be appropriated to the Secretary to carry out the purposes of this paragraph a total amount for each of the fiscal years 1990 through 1992 not to exceed \$5,000,000 with respect to renewable energy activities under this paragraph and \$5,000,000 with respect to energy efficiency activities under this paragraph.

SEC. 7. RENEWABLE ENERGY EXPORTS.

(a) FINDINGS AND PURPOSE.—(1) Congress finds that—

(A) Among the major problems in promoting exports of renewable energy technology are the lack of available information on overseas markets and the absence of financing for the purchase of the technologies; and

(B) The Committee on Renewable Energy, Commerce, and Trade ("CORECT") established under the Renewable Energy Industry Development Act (Public Law 98-370) currently coordinates Federal government activities to promote renewable energy exports.

(2) The purpose of this section is to evaluate current efforts to promote exports of renewable energy technology, to establish a joint government-industry plan to identify promising technologies and increase the financing available for exports of renewable energy technologies, to target potential markets for these technologies, and to authorize funding of these activities.

(b) REVIEW OF CORECT.—In order to provide reliable information on overseas markets for renewable energy technology, the Secretary shall review the activities of the Committee on Renewable Energy, Commerce, and Trade in order to determine if current efforts by such Committee to promote exports of renewable energy technology are sufficient and whether additional efforts are necessary. The Secretary shall report to Congress the results of such review within six months after the date of the enactment of this Act.

(c) REPORTS.—Each participating member of the Committee on Renewable Energy, Commerce, and Trade shall report annually to Congress on the actions of such agency during the previous fiscal year to achieve the purposes of the Committee on Renewable Energy, Commerce, and Trade and of this section. Such report shall describe the exports of renewable energy technology that have occurred as a result of such agency actions.

(d) PLAN.—The Committee on Renewable Energy, Commerce, and Trade shall—

(1) establish a joint government-industry plan to maintain or increase the market share of the United States in international trade in renewable energy technologies, including technologies for production of alcohol fuels, biomass energy, geothermal energy, wood energy and in technologies for passive solar

energy conversion, photovoltaics, solar thermal energy conversion and wind energy conversion. Such plan shall include guidelines for agencies that are members of the Committee with respect to the financing of exports of such renewable energy technologies;

(2) develop, in consultation with representatives of affected industries, administrative guidelines for Federal export loan programs to simplify application by firms seeking export assistance for renewable energy technologies from agencies implementing such programs; and

(3) target renewable energy technology markets for primary emphasis by Federal export loan programs, development programs, and private sector assistance programs.

(e) **AUTHORIZATIONS.**—There is hereby authorized to be appropriated to the Secretary for activities of the Committee on Renewable Energy, Commerce, and Trade an amount not to exceed—

- (1) \$1,500,000 in fiscal year 1990;
- (2) \$2,200,000 in fiscal year 1991; and
- (3) \$2,500,000 in fiscal year 1992.

SEC. 8. RENEWABLE ENERGY.

(a) **DISSEMINATION OF INFORMATION.**—Section 523 of the National Energy Conservation Policy Act (42 U.S.C. 8243) is amended by adding a new subsection (d) as follows:

“(d) In order to more widely disseminate information about the program under this part and under part 3 and the benefits of solar heating and solar heating and cooling technology, the Secretary shall establish a program to disseminate such information for Federal procurement officers and Federal loan officers that shall include site visits and technical briefings. The Secretary shall utilize available funds for the program under this subsection.”

(b) **RENEWABLE ENERGY IN THE CARIBBEAN INITIATIVE.**—Section 212(c)(7) of the Caribbean Basin Economic Recovery Act (97 Stat. 387; 19 U.S.C. 2703(c)(7)) is amended to read as follows:

“(7) the degree to which such country is undertaking self-help measures to promote its own economic development and energy self-sufficiency using locally available renewable resources;”

(c) **DEPARTMENT OF DEFENSE HOUSING.**—Section 2857(b)(1) of title 10, United States Code, is amended by inserting after “has the potential for” the following: “reduced energy costs”.

(d) **EXPORT-IMPORT BANK LOANS.**—Section 7 of the Export-Import Bank Act of 1945 (12 U.S.C. 635e) is amended by adding at the end thereof the following:

“(c)(1) Not less than 0.025 percent of the loan authority of the Bank in any fiscal year shall be available only for solar and renewable energy loans.

“(2) The President of the Bank may waive the requirements of paragraph (1) if he determines, after June 30 of the fiscal year in question, that the Bank is unlikely to receive during such fiscal year a sufficient number of qualified proposals to exhaust the loan authority made available for solar and renewable energy loans under such paragraph. Any determination by the President of the Bank under this paragraph shall be promptly transmitted in writing to Congress.”

(e) **OVERSEAS PRIVATE INVESTMENT CORPORATION LOANS.**—Section 234(e) of the Foreign Assistance Act of 1961 is amended—

(1) in the first sentence, by inserting after “cooperatives” the following: “and including the initiation of incentives, grants, and studies for renewable energy and other small business activities”; and

(2) by adding at the end thereof the following new sentence: “Administrative funds may not be made available for incentives, grants, and studies for renewable energy and other small business activities.”

(f) **SMALL BUSINESS LOANS.**—(1) Section 7(1) of the Small Business Act (15 U.S.C. 636(1)) is repealed.

(2) Section 7(a)(12) of such Act (15 U.S.C. 636(a)(12)) is amended to read as follows:

“(12)(A) The Administrator may provide loans under this subsection to assist any small business concern, including startup, to enable such concern to design architecturally or engineer, manufacture, distribute, market, install, or service energy measures. Proceeds of loans under this paragraph shall not be used for research and development.

“(B) Not less than .025 percent of the loan authority provided in any fiscal year under this subsection shall be available only for loans under this paragraph. The Administrator shall include a list of solar and renewable energy loans in an annual report to Congress.

"(C) The Administrator may waive the requirements of subparagraph (B) if he determines, after June 30 of the fiscal year in question, that the Administrator is unlikely to receive during such fiscal year a sufficient number of qualified proposals to exhaust the loan authority made available for solar and renewable energy loans under such sentence. Any determination under this subparagraph shall be promptly transmitted in writing to Congress."

(3) Section 7(a)(14) of such Act (15 U.S.C. 636(a)(14)) is amended to read as follows:

"(14) The Administrator under this subsection may provide extensions and revolving lines of credit for export purposes to enable small business concerns to develop foreign markets and for preexport financing. No such extension or revolving line of credit may be made for a period or periods exceeding 18 months. A bank or participating lending institution may establish the rate of interest in extensions and revolving lines of credit as may be legal and reasonable. The Administrator shall give due consideration to the export potential of solar and renewable energy products in implementing his authorities under this subsection and shall include a list of solar and renewable energy loan guarantees in an annual report to the Congress."

SEC. 9. REPORTS.

(a) **REPORT BY THE SECRETARY.**—One year after the date of the enactment of this Act and annually thereafter, the Secretary shall report to Congress on the programs, projects, and joint research and development ventures conducted under this Act and the progress being made towards accomplishing the goals and purposes set forth in this Act, including the national goals set forth in section 4(a).

(b) **NATIONAL ENERGY POLICY PLAN REPORT.**—Each annual submission of the National Energy Policy Plan under Title VIII of Public Law 95-91 shall be accompanied by a three-year strategic plan for energy technology research, development, and demonstration. Such plan shall address the role of federally-assisted research, development, and demonstration in the achievement of the national policy goals of the National Energy Policy Plan and shall assess both the level of support for energy research, development, and demonstration reasonably necessary to achieve these goals and the basis for allocating the support recommended by the President among the available alternatives. At a minimum, these alternatives shall include energy efficiency and renewable energy technologies.

2. Amend the title so as to read:

A bill to provide Federal assistance and leadership to a program of research, development, and demonstration of renewable energy and energy efficiency technologies, and for other purposes.

PURPOSE OF THE MEASURE

The purpose of S. 1554, as ordered reported, is to—

(1) establish long-term goals and multiyear funding levels for research, development, and demonstration in renewable energy and energy efficiency technologies;

(2) direct the Secretary of Energy to undertake initiatives to hasten the commercialization of renewable energy and energy efficiency technologies; and

(3) foster collaborative joint venture research and development efforts involving the private sector.

BACKGROUND AND NEED

BACKGROUND

During the 1970's, under the stimulus of oil price shocks in 1973-74 and in 1979, the United States established a substantial program of research, development, and demonstration (RD&D) aimed at developing new sources of energy and new ways to use energy more efficiently. There was a broad consensus for this effort and considerable enthusiasm about its promise. In response to inflated oil prices throughout the 1970's, Congress made appropriations

available in increasing amounts for energy RD&D in nuclear energy, fusion, solar and renewable energy, fossil energy, and energy conservation and for research into other, more exotic, energy forms.

By fiscal year 1980, Department of Energy appropriations were \$11.2 billion. Approximately 68% of the Department's 1980 appropriations were devoted to energy programs. Of this, approximately \$3.8 billion was spent on civilian energy RD&D. The appropriations for fossil energy research and development, excluding the synthetic fuels program, were about \$900 million in fiscal year 1980. The solar and renewable energy RD&D program received \$770 million. Energy conservation RD&D received \$300 million.

By comparison, the current Department energy RD&D program, as it is portrayed by the appropriations for fiscal year 1988, is a substantially different one. The total appropriations available to the Department were \$14.1 billion in fiscal year 1988, but comparable energy RD&D programs only received about \$1.8 billion. Energy conservation research and development received \$156 million, and renewable energy research and development received \$149 million.

Two major factors contributed to this dramatic retrenchment in Federal support for energy RD&D.

First, since 1981, the Administration consistently has advocated the restriction of Federal energy RD&D support to long-term, high-risk research on energy technologies. In this view Federal support for development and commercial demonstration of energy technologies is the sole responsibility of the private sector, based on market forces. This policy was adopted by the Administration during a period of inflated energy prices, a situation that does not exist today. The only exception to it during the 1980's has been the Administration's support for cost-shared joint ventures as a means of fostering the commercial demonstration of clean coal technologies.

The second major factor contributing to this retrenchment is the need to balance the Federal budget, which has led to across-the-board reductions in discretionary Federal spending. In spite of these budgetary pressures, Congress has consistently appropriated more than the Administration has requested for Federal energy RD&D programs. However, in no sense has Congressional support for these programs approximated the commitment to them that prevailed in the 1970's, nor can such a commitment be expected as long as these budgetary pressures continue.

These two factors have combined to create an environment of uncertainty in which neither the Federal government nor private industry has sufficient incentive to undertake the commercial development of new energy technologies. This uncertainty has been most damaging to the commercialization of renewable energy and energy efficiency technologies. The majority of the firms that perform the RD&D for these technologies are small businesses whose access to capital and ability to withstand soft markets are limited in the best of circumstances. As long as energy prices remain at present levels substantial obstacles to the commercialization of these technologies will exist. Indeed, many of the firms that were

active in renewable energy and energy efficiency RD&D have been forced to abandon their efforts.

This retrenchment has come at a time when international competition in renewable energy and energy efficiency technologies has been intensifying. It has come at a time when many renewable energy and energy efficiency technologies are nearing commercial viability. New markets for these technologies now appear to be opening up.

For example, the market share of United States firms in photovoltaics and wind energy machines, once strong, has declined significantly in the face of determined efforts by national governments in Japan and in Europe to support their own emerging energy efficiency and renewable energy industries. U.S. manufacturers dominated the photovoltaics market through 1983, but by 1984 competitors were challenging this dominance. Boosted by sales of photovoltaics for calculators, Japan became world leader in photovoltaics sales in 1985. Companies in Europe and India have also increased market share relative to U.S. firms.

The photovoltaic market for calculators will soon give way to a much larger market for photovoltaics to supply electric power in rural and remote environments. Substantial growth in sales of photovoltaics throughout the 1990's for this application is widely anticipated. Foreign governments are mobilizing their own firms in preparation to challenge strongly for this growing market. In the U.S., support for photovoltaics remains a fraction of the level that could produce a strong U.S. challenge.

U.S.-manufactured wind machines dominated domestic installations through 1985. Foreign imports were limited to a small percentage of the annual installation rate until 1984, when Danish companies began to make inroads. In 1986, foreign imports exceeded the installation of domestic machines for the first time, by a two-to-one ratio.

Thus, the U.S. has both withdrawn substantial support and raised the uncertainty about future support for its renewable energy and energy efficiency industries at a time that could be critical for the development of these technologies and the position of the U.S. industry in expanding world markets in such technologies.

NEED FOR THE LEGISLATION

Testimony before Congressional committees on the problems of making renewable sources of energy available to the U.S. economy has over and over again stressed the need for stable and predictable funding for the research efforts and the need to continue support for renewable technologies right up to the threshold of commercialization. Identical advice has been offered on the subject of new energy efficiency technologies.

In each case the private sector that will play the principal role in bringing forth marketable products will be overwhelmingly composed of small- to intermediate-sized firms. These firms will require assistance to be successful in their efforts, particularly in view of the strong interest on the part of foreign governments in supporting their own renewable energy and energy efficiency manufacturing and marketing firms.

The testimony received by Congress on the needs of U.S. firms working to commercialize renewable energy and energy efficiency technologies stands in contrast to the Administration's policy of emphasizing primarily long-range, high-risk research and avoiding any Federal role in the commercialization process. Over the past seven years, Congress has attempted to provide additional resources for renewable energy and energy efficiency RD&D. These efforts have preserved some valuable research for future application, but have not resulted in anything like an optimal national program of research, development and demonstration, especially given the opportunities that world markets appear to offer and the competition that is developing for these markets.

The purpose of this legislation is to obtain some agreement between Congress and the Administration about the goals of existing RD&D programs in renewable energy and energy efficiency and to provide stable multi-year funding targets to achieve those goals. The principal mechanism to achieve these goals is authorization of joint venture research and development efforts, incorporating significant cost sharing with private firms, similar to those now being used for the commercial demonstration of clean coal technologies.

In addition, the legislation seeks to provide Federal support for renewable energy and energy efficiency efforts to commercialize the technologies have been developed from research carried out in the past. While current policies are resulting in good research, there is a lack of follow through leading to marketable products. The legislation attempts to address this concern by requiring greater emphasis on demonstrating commercially viable RD&D results in connection with cost sharing arrangements with private firms.

In renewable energy and energy efficiency research and development, there is a need to provide assistance in the transition from the stage of prototype testing to commercial demonstration. Long-range, high-risk research may be successfully assigned to government laboratories and universities, because the market-driven imperatives of commercialization will not become important to the design of the research until the risks have been reduced. However, once these risks have been reduced, it is critical to involve the private sector in the transition to commercialization. To carry out this transition efficiently, it is necessary to work in close consultation with private firms, especially including future customers for the technology. A vehicle for such cooperation that has proven useful in the past is the cost-shared demonstration under which a substantial share of the design and cost of the program is borne by private firms and the detailed management of any project is entirely the responsibility of private participants.

In the case of energy efficiency and renewable energy RD&D, these cost-shared ventures can be particularly useful if the Federal government can play a strong role in bringing together the manufacturing firms and users in support of projects that can define costs and increase user confidence in the state of the technology. The legislation encourages a partnership between government and the private sector in designing a commercialization strategy for promising renewable energy and energy efficiency technologies. Joint research and development ventures are proposed in the legislation in six areas in order to ensure that specific proposals will be

forthcoming from the Administration. The six areas are general enough to permit the Department the flexibility to match the design of the joint venture to the commercialization needs of the technology in question. But six proposals are in fact required so that definitive action to further a partnership role for the Federal government in commercialization will be ensured.

Without the partnership between the Federal government, domestic manufacturers and marketers of renewable energy and energy efficiency technologies, and potential users that is envisaged by this legislation, the availability of these technologies U.S. economy could be substantially delayed. Moreover, without the partnership envisaged by this legislation, we could well find these technologies available only through sales personnel representing Japanese or European firms.

LEGISLATIVE HISTORY

The Subcommittee on Energy Research and Development held hearings on March 24 and 26, 1987 and on July 13, 1987 on renewable energy and energy efficiency policies and funding. On July 28, 1987, S. 1554 was introduced by Senator Fowler, for himself and Senators Matsunaga, Wirth, Ford, Bumpers, and DeConcini. Subsequently Senators Byrd, Kennedy, Kerry, Stafford, Sanford, Bingaman, Inouye, Conrad, Shelby, Cochran, Pryor, Simon, Mitchell, Cranston, Riegle, Heinz, and Moynihan were added as cosponsors of S. 1554.

On June 3, 1987, S. 1320, the "Solar Development Initiative Act of 1987" was introduced by Senator Bumpers, for himself and Senators Fowler, DeConcini, Matsunaga, and Cranston. Subsequently, Senators Inouye, Mitchell, Kerry, Kennedy, and Glenn were added as cosponsors of S. 1320.

The Subcommittee on Energy Research and Development held a hearing on S. 1554 and S. 1320 on August 6, 1987. On May 18, 1988, the Subcommittee held an additional hearing on the status of Federal programs of research, development and demonstration of renewable energy and energy efficiency technologies.

At the business meeting on August 11, 1988, the Committee considered S. 1554 and agreed to several amendments, including major portions of S. 1320. The Committee then ordered an amendment in the nature of a substitute to S. 1554 favorably reported.

COMMITTEE RECOMMENDATION AND TABULATION OF VOTES

The Senate Committee on Energy and Natural Resources, in open business session, on August 11, 1988 by unanimous voice vote of a quorum present recommends that the Senate pass S. 1554, if amended as described herein.

COMMITTEE AMENDMENT

During the consideration of S. 1554, the Committee adopted a series of amendments to the text of S. 1554, incorporated major provisions of S. 1320 into a separate section 8 of the bill, and ordered a complete substitute amendment to S. 1554 reported to the Senate. The principal changes in S. 1554 as introduced are de-

scribed below. Additional details on the provisions of the bill as ordered reported are contained in the Section-by-Section Analysis portion of this report.

1. Authorizations

Years in which authorizations for appropriations are provided or deadlines set were increased by two years; for example, an authorization of appropriations of fiscal year 1988 in S. 1554 as introduced becomes an authorization of appropriations for fiscal year 1990 in S. 1554 as reported, and so forth.

2. Non-Nuclear Research and Development Policy Act of 1974

The bill was amended to make clear that actions required by S. 1554 as reported would be carried out in a manner consistent with the provisions of the Non-Nuclear Research and Development Policy Act of 1974 and other law applicable to the Secretary of Energy.

3. Location of Projects

The bill was amended to provide that any project under the S. 1554 as reported must be located in the United States (including Puerto Rico, the Virgin Islands or the territories and possessions of the United States).

4. Federal Buildings

Section 7 of S. 1554 as introduced, which provided for a survey of Federal buildings and identification of specific buildings that are candidates for deployment of renewable energy or energy efficiency improvements, was deleted from S. 1554 as ordered reported because similar legislation (H.R. 4065) that accomplishes essentially the same purpose was earlier reported by the Committee and considered by the Senate; enactment of this bill by Congress is expected. In addition, findings and purposes related to the role of Federal buildings in energy efficiency and renewable energy policy in S. 1554 as introduced were deleted from S. 1554 or ordered reported.

5. Fuel Cells

The proposed joint research and development venture between the private sector and the Federal government for the application of fuel cells in section 6(c)(6) of S. 1554 as introduced was deleted from S. 1554 as ordered reported because the Committee had earlier reported and the Senate had passed legislation (S. 1294) addressing the same issues.

6. Energy Efficiency

The phrase "energy conservation" in S. 1554 as introduced is replaced everywhere it appears by the phrase "energy efficiency" in S. 1554 as ordered reported.

7. Provisions of S. 1320

The Committee agreed to incorporate modified provisions of S. 1320, the "Solar Development Initiative Act of 1987", into S. 1554 as ordered reported. These provisions include—

- a modified version of section 4(b) of S. 1320, relating to the dissemination of information about the use of renewable energy in Federal buildings to Federal procurement and Federal loan officers;
- section 5(c) of S. 1320, relating to the role of renewable energy resources in the Caribbean Basin Initiative;
- section 6(a) of S. 1320, providing for increased flexibility in procurement of renewable energy technologies in new facilities of the Department of Defense;
- a modified version of section 7 of S. 1320, providing for a set-aside of Export-Import Bank loan authority for renewable energy loans;
- section 8 of S. 1320, relating to the role of renewable energy in the Overseas Private Investment Corporation; and
- a modified version of section 9 of S. 1320, providing a set-aside of Small Business Administration loan authority for renewable energy loans.

SECTION-BY-SECTION ANALYSIS

Section 1 provides the short title of the bill: the "Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1988".

Section 2 contains the findings and purposes of the Act. An important purpose of the Act is to shift the focus of efforts of the Department of Energy in research, development, and demonstration in energy efficiency and renewable energy technology towards realization in commercial terms of the fruits of the long-range, high risk research that the Department has emphasized in recent years. Accordingly, the bill seeks to provide stability in future funding levels for these efforts, to direct the Secretary of Energy to place a significant new emphasis on commercialization of energy efficiency and renewable energy technologies, and to bring the private sector into a closer partnership with the Department in undertaking specific commercialization projects.

Section 3 contains the definitions of terms used in the Act.

Section 4 provides long-term goals, multiyear authorizations of appropriations, and policy direction for the renewable energy research, development, and demonstration (RD&D) programs of the Department of Energy.

Subsection (a) sets forth both general and technical goals for Department of Energy RD&D programs in wind, photovoltaics, and solar thermal technologies and requires the Secretary of Energy to submit goals for other RD&D programs in renewable energy in his fiscal year 1991 budget request. It is not the intent of this section to reduce the flexibility of DOE program managers or to circumvent the processes of internal review within the Department that lead to the development of objectives for these programs. Rather, the intent is to obtain an agreement between the Administration and Congress about certain of the technical objectives of Federal renewable energy programs so that progress towards specific goals can be assessed on an annual basis and levels of proposed program effort in any year can be evaluated in relation to this progress. The Department is expected, at all times, to strive to meet these goals

and to make full use of the authority in section 4(c)(3) to propose amended goals as a way of continuing the dialogue with Congress over the pace and direction of these programs.

Subsection (b) provides authorizations of appropriations for fiscal years 1990, 1991, and 1992 for Departmental RD&D programs in wind, photovoltaics, solar thermal systems, solar buildings, bio-fuels, ocean thermal energy systems, and geothermal energy.

Subsection (c) requires the Secretary to submit demonstration or proof-of-concept proposals involving renewable energy technologies in his 1992 budget request, to present Congress by May 1, 1991 with options for furthering timely commercialization of renewable energy technologies that are near commercial application, and, when appropriate, to provide Congress with amended goals to replace those established under the Act. In requiring the development of proof-of-concept or demonstration proposals it is not intended that these proposals be funded at the expense of ongoing research. Rather, it is intended that definitive options be developed with appropriate internal review that can be submitted to Congress to be considered for additional funding consistent with other programmatic priorities. It is not anticipated that Congress will fund any demonstration project not found meritorious in furthering the commercialization of technologies for which research and development has reached a mature stage.

Section 5 provides multiyear authorizations of appropriations and policy direction for energy efficiency research, development, and demonstration programs of the Department of Energy.

Subsection (a) requires the Secretary of Energy to set aside in his budget requests for fiscal years 1991 and 1992 funds for new initiatives in energy efficiency research, development, and demonstration. The intent of the requirement to make a limited amount of funds available for new initiatives is to provide a mechanism to attract new ideas from the private sector or from within the DOE laboratories that have the potential to stimulate new areas of energy efficiency research, development or demonstration.

Subsection (b) provides authorization for appropriations for existing energy efficiency research, development, and demonstration programs of the Department for fiscal years 1990, 1991, and 1992.

Section 6 requires the Secretary of Energy to establish and provide financial assistance to six specified joint research and development ventures. These six topics are: photovoltaic energy systems; wind energy systems; solar thermal systems; factory-made housing; advanced district cooling technology; and renewable energy and energy efficiency technology export projects. Joint research and development ventures are defined in the National Cooperative Research Act of 1984. The Committee intends that the ventures under this section qualify automatically as joint research and development ventures under that Act.

Section 7 requires the Secretary of Energy to review the activities of the Committee on Renewable Energy, Commerce, and Trade (CORECT) and provides for reports on the sufficiency of efforts to promote exports of renewable energy technology. CORECT would also be required to establish a joint government-industry plan to maintain or increase the market share of the trade of the United States in renewable energy technologies.

Section 8 contains several subsections amending current law to enhance the prospects for renewable energy and energy efficiency technologies in domestic commerce and in international trade.

Subsection (a) amends the provisions of the National Energy Conservation Policy Act to require that the Secretary of Energy establish a program to disseminate information for Federal procurement and loan officials on the lessons that can be learned from solar heating and solar heating and cooling technologies that have been employed in Federal buildings. This program is to include site visits and briefings for these officials.

Subsection (b) amends the Caribbean Basin Economic Recovery Act to include in the factors to be taken into account when the President designates beneficiary countries the promotion of energy self sufficiency using locally available renewable resources.

Subsection (c) modifies the defense procurement statutes to allow the Department of Defense more flexibility to decide which designs for new facilities have the greatest potential for solar energy and other renewable energy applications by making the potential for reduced energy costs the test for choosing such applications.

Subsection (d) provides a set-aside of 0.025 percent of the loans of the Export-Import Bank (approximately \$173,000 at the current Bank loan authority of \$690 million) for solar and renewable energy loans. The President of the Bank could waive this requirement for any fiscal year if he determines after June 30 of that year that there is unlikely to be a sufficient number of qualified proposals to exhaust the set-aside.

Subsection (e) amends the Foreign Assistance Act of 1961 to provide that funds be made available through the Overseas Private Investment Corporation to initiate incentives, grants, and studies for renewable energy and other small business activities.

Subsection (f) amends the Small Business Act to eliminate certain reporting requirements and to replace the existing separate energy loan program with a set-aside of 0.025 percent (approximately \$650,000 at the current Small Business Administration loan authority of \$2.6 billion) for solar and renewable energy loans in the general Small Business Administration loan program. The SBA Administrator may waive this set-aside requirement in any fiscal year if he determines after June 30 of that year that there is unlikely to be a sufficient number of qualified proposals to exhaust the set-aside.

Section 9 requires annual reports to Congress on activities under the Act and on progress being made towards accomplishing the goals of the Act and requires the National Energy Policy Plan to assess research, development, and demonstration needs and to justify the allocation of support recommended.

COST AND BUDGETARY CONSIDERATIONS

The following estimate of the cost of this measure has been provided by the Congressional Budget Office.

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, September 7, 1988.

Hon. J. BENNETT JOHNSTON, Jr.,
Chairman, Committee on Energy and Natural Resources,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the attached cost estimate for S. 1554, the Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1988.

If you wish further details on this estimate, we will be pleased to provide them.

Sincerely,

JAMES L. BLUM,
Acting Director.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

1. Bill number: S. 1554.
2. Bill title: Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1988.
3. Bill status: As ordered reported by the Senate Committee on Energy and Natural Resources, August 11, 1988.
4. Bill purpose: S. 1554 establishes national goals for federal wind, photovoltaics, and solar thermal programs, and authorizes funds for these and other renewable energy and energy conservation programs. The bill authorizes \$379 million for fiscal year 1990, \$410 million for fiscal year 1991, and \$433 million for fiscal year 1992.
- S. 1554 also directs the Export-Import Bank and the Small Business Administration to use .025 percent of their existing federal loan authority for solar and renewable energy loans.
5. Estimated cost to the Federal Government:

[By fiscal years, in millions of dollars]

	1989	1990	1991	1992	1993
Authorization level.....	—	379	410	433	—
Estimated outlays.....	—	130	323	404	277

The costs of this bill fall within budget function 270.

Basis of Estimate.—CBO assumes that all amounts authorized will be appropriated and that spending will occur at historical rates for similar research and development programs. The authorization levels for all years are established in the bill.

6. Estimated cost to State and local governments: None.
7. Estimated comparison: None.
8. Previous CBO estimate: None.
9. Estimate prepared by: Peter Fontaine.
10. Estimate approved by: James L. Blum, Assistant Director for Budget Analysis.

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of Rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact that would be incurred in carrying out S. 1554.

The bill is not a regulatory measure in the sense of imposing government-established standards or significant economic responsibilities on private individuals and businesses. The bill contains authorizations for research, development and demonstration programs of the Secretary of Energy and directives to the Secretary with respect to the operation of these programs. Any involvement of private firms and individuals in these research, development and demonstration programs is voluntary.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy from the bill.

Little, if any, additional paperwork would result from the enactment of S. 1554.

EXECUTIVE COMMUNICATIONS

The Committee requested reports on S. 1554 from the Department of Energy and from the Office of Management and Budget on July 29, 1987. On July 21, 1987, reports on S. 1320 were requested by the Committee from the Department of Energy, the Export-Import Bank, the Department of Defense, the Overseas Private Investment Corporation, and the Small Business Administration.

The pertinent legislative reports and communications received by the Committee setting forth Executive agency recommendations relating to S. 1554 and S. 1320 follow:

EXPORT-IMPORT BANK OF THE UNITED STATES,
Washington, DC, November 21, 1987.

DEAR MR. CHAIRMAN: We are responding to your request for the comments of the Export-Import Bank of the United States on Section 7 of S. 1320, the Solar Development Initiative Act of 1987, introduced on June 3, 1987 by Senator Bumpers. Section 7 of the bill would amend Section 7 of the Export-Import Bank Act of 1945, as amended (Act) by creating a set-aside of "not less than .025 percent of the loan authority of the Bank" to be made available for solar and renewable energy loans. Eximbank is opposed to Section 7 of the proposed bill for the reasons set forth below.

Eximbank is already directed by statute to pay special attention to transactions involving exports related to renewable energy resources. In Section (2)(b)(1) of the Act, the Board of Directors is required to name an officer of the Bank to spearhead the Bank's efforts to promote exports of all renewable energy goods and resources. In a number of instances, we have consulted with the Department of Energy on renewable energy projects and are currently participating in the Department of Energy's Committee on Renewable Energy, Commerce and Trade (CORECT). We already include as part of our annual report to Congress a statement on our efforts in exporting renewable energy resources. In short, we are

interested in and actively promoting the exports by U.S. firms of renewable energy products and projects.

While Eximbank has sought to find ways to promote exports related to solar and all other renewable energy resources, we oppose any legislatively mandated requirements of a set-aside for any particular section of U.S. exports. First, we object in general to such legislation, because we believe that only through maximum flexibility in using our resources can we serve most effectively the needs of the entire U.S. export community. Second, it appears highly unlikely that we would be able consistently to meet any set-aside requirements in view of the few renewable energy transactions and the even fewer solar transaction we have actually been asked to support in firm U.S. sales over the past years (beyond the Preliminary Commitment stage where we make offers of financing for U.S. sellers to use in the "bid" or negotiation process but which are not charged against our authority at that time). At the same time, we would be prevented from using those resources to support other export transactions. The net effect, thus, of the proposed legislation is likely to be neutral with regard to the renewable energy industry but detrimental to U.S. exports as a whole.

Thank you for giving us the opportunity to provide you with these comments. The Office of Management and Budget advises that from the standpoint of the Administration's program there is no objection to the submission of this report.

Sincerely,

JOHN A. BOHN, Jr.

GENERAL COUNSEL OF THE
DEPARTMENT OF DEFENSE,
Washington, DC, September 30, 1987.

HON. J. BENNETT JOHNSTON,
Chairman, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: This is in response to your request of July 21, 1987, for the views of the Department of Defense on S. 1320, 100th Congress, a bill "To provide adequate funding levels for solar energy research and development, to encourage Federal procurement of solar energy systems, to encourage Federal loans for solar energy equipment, to enhance the international competitiveness of the solar industry, and for other purposes."

S. 1320, in Section 6(a), would amend Section 2857(b)(1) of title 10, United States Code, apparently so that the criterion for considering energy systems using renewable forms of energy in the design of all new facilities is changed from one of considering all energy systems which have the potential for "significant savings of fossil-fuel-derived energy" to one of considering only those energy systems which have the potential for "reduced energy costs". This interpretation is based on the assumption that the amendment in Section 6(a) intends also to delete "significant savings of fossil-fuel-derived energy" from Section 2857(b)(1).

This legislation would simplify the process of considering energy systems using renewable forms of energy in the design of new facilities.

The Department of Defense supports Section 6(a) of this legislation.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee.

Sincerely,

L. NIEDERLEHNER,
Deputy General Counsel.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of Rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill S. 1554, as ordered reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, and existing law in which no change is proposed is shown in roman):

NATIONAL ENERGY CONSERVATION POLICY ACT

Public Law 95-619, as Amended

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—GENERAL PROVISIONS

SEC. 101. SHORT TITLE AND TABLE OF CONTENTS.

(a) **SHORT TITLE.**—This Act may be cited as the "National Energy Conservation Policy Act".

* * * * *

SEC. 522. FEDERAL SOLAR PROGRAM.

The Secretary, in consultation with the Administrator of the General Services Administration, shall develop and carry out a program to demonstrate the application to buildings of solar heating and solar heating and cooling technology in Federal buildings.

SEC. 523. DUTIES OF SECRETARY.

(a) **DUTIES.**—In exercising the authority provided by section 522, the Secretary, in consultation with the Administrator of the General Services Administration, shall—

(1) promulgate, by rule—

(A) requirements under which Federal agencies shall submit proposals for the installation or solar energy equipment in Federal buildings which are under their control and which are selected in accordance with procedures set forth in such rule, and

(B) criteria by which proposals under subparagraph (A) will be evaluated, which criteria shall provide for the inclusion in each proposal of a complete analysis of the

present value, as determined by the Secretary, of the costs and benefits of the proposal to the Federal agency, and for the demonstration, to the maximum extent practicable, of innovative and diverse applications to a variety of types of Federal buildings of solar heating and solar heating and cooling technology, and for location of demonstration projects in areas where a private sector market for solar energy equipment is likely to develop;

(2) evaluate in writing each such proposal pursuant to the criteria promulgated pursuant to paragraph (1)(B), and make such evaluation available to the agency and, upon request, to any person;

(3) provide technical and financial assistance by interagency agreement for implementing a proposal evaluated under paragraph (2) and approved by the Secretary; except that such assistance shall be limited to the design, acquisition, construction, and installation of solar energy equipment;

(4) provide, by rule, that Federal agencies report to the Secretary periodically such information as they acquire respecting maintenance and operation of solar energy equipment for which assistance is provided under paragraph (3);

(5) require that a life cycle cost analysis in accordance with part 3 be done for any Federal building for which a proposal is submitted under this section and the results of such analysis be included in such proposal; and

(6) if solar energy equipment for which assistance is to be provided under paragraph (3) is not the minimum life-cycle cost alternative, require the Federal agency involved to submit a report to the Secretary stating the amount by which the Life-cycle cost of such equipment exceeds the minimum life-cycle cost.

(b) **CONTENTS OF PROPOSALS.**—Proposals under paragraph (1)(A) of subsection (a) shall include a list of the specific Federal buildings proposed to be provided with solar energy equipment, the funds necessary for the acquisition and installation of such equipment, the proposed implementation schedule, maintenance costs, the estimated savings in fossil fuels and electricity, the estimated payback time, and such other information as may be required by the Secretary.

(c) **INITIAL SUBMISSION OF PROPOSALS.**—Under the requirements established under subsection (a)(1)(A), initial proposals for the installation of solar energy equipment in Federal buildings selected under subsection (a)(1)(A) shall be submitted not later than 180 days after the date of promulgation of the rule under subsection (a)(1).

(d) *In order to more widely disseminate information about the program under this part and under part 3 and the benefits of solar heating and solar heating and cooling technology, the Secretary shall establish a program to disseminate such information for Federal procurement officers and Federal loan officers that shall in-*

clude site visits and technical briefings. The Secretary shall utilize available funds for the program under this subsection.

* * * * *

Public Law 98-67

AN ACT To promote economic revitalization and facilitate expansion of economic opportunities in the Caribbean Basin region, to provide for backup withholding of tax from interest and dividends, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

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TITLE II—CARIBBEAN BASIN INITIATIVE

SEC. 201. SHORT TITLE.

This title may be cited as the "Caribbean Basin Economic Recovery Act".

* * * * *

SEC. 212. BENEFICIARY COUNTRY.

(a) * * *

* * * * *

(c) In determining whether to designate any country a beneficiary country under this title, the President shall take into account—

(1) an expression by such country of its desire to be so designated;

(2) the economic conditions in such country, the living standards of its inhabitants, and any other economic factors which he deems appropriate;

(3) the extent to which such country has assured the United States it will provide equitable and reasonable access to the markets and basic commodity resources of such country;

(4) the degree to which such country follows the accepted rules of international trade provided for under the General Agreement on Tariffs and Trade, as well as applicable trade agreements approved under section 2(a) of the Trade Agreements Act of 1979;

(5) the degree to which such country uses export subsidies or imposes export performance requirements or local content requirements which distort international trade;

(6) the degree to which the trade policies of such country as they relate to other beneficiary countries are contributing to the revitalization of the region;

[(7) the degree to which such country is undertaking self-help measures to promote its own economic development;]

(7) the degree to which such country is undertaking self-help measures to promote its own economic development and energy self-sufficiency using locally available renewable resources;

(8) the degree to which workers in such country are afforded reasonable workplace conditions and enjoy the right to organize and bargain collectively;

(9) the extent to which such country provides under its law adequate and effective means for foreign nationals to secure, exercise, and enforce exclusive rights in intellectual property, including patent, trademark, and copyright rights;

(10) the extent to which such country prohibits its nationals from engaging in the broadcast of copyrighted material, including films or television material, belonging to United States copyright owners without their express consent; and

(11) the extent to which such country is prepared to cooperate with the United States in the administration of the provisions of this title.

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TITLE 10—ARMED FORCES

* * * * *

§ 2857. Use of renewable forms of energy in new facilities

(a) The Secretary of Defense shall encourage the use of energy systems using solar energy or other renewable forms of energy as a source of energy for military construction projects (including military family housing projects) where use of such form of energy would be practical and economically feasible.

(b)(1) The Secretary concerned shall require that the design of all new facilities (including family housing) shall include consideration of energy systems using solar energy or other renewable forms of energy in those cases in which use of such form of energy has the potential for [significant savings of fossil-fuel-derived energy.] *reduced energy costs.*

* * * * *

EXPORT-IMPORT BANK ACT OF 1945

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SEC. 7. (a)(1) The Export-Import Bank of the United States shall not have outstanding at any one time loans, guarant[ies] and insurance in an aggregate amount in excess of \$40,000,000,000. All spending and credit authority provided under this subchapter shall be effective for any fiscal year only to such extent or in such amounts as are provided in Appropriation Acts.

(2)(A)(i) Not later than March 31 of each fiscal year, the President of the United States shall determine whether the authority available to the Bank for such fiscal year will be sufficient to meet the Bank's needs, particularly those needs arising from—

(I) increases in the level of exports unforeseen at the time of the original budget request for such fiscal year;

(II) any increased foreign export credit subsidies; or

(III) the lack of progress in negotiations to reduce or eliminate export credit subsidies.

(ii) Not later than April 15 of each year, the President of the United States shall transmit to the Congress a report of such determination.

(B)(i) If the President of the United States finds that the amount of direct loan authority or guarantee authority available to the Bank for the fiscal year involved exceeds the amount which will be necessary to carry out the Bank's functions consistent with the availability of qualified applications and limitations imposed by law during such year, the President of the United States shall promptly transmit to the Congress a request for legislation to eliminate the amount of such excess direct loan, loan guarantee, or insurance authority.

(ii) The Bank shall continue to make remaining amounts of its authority available for the fiscal year involved, in accordance with its practices and the requirements of this chapter, unless otherwise directed pursuant to law.

(3) There are authorized to be appropriated \$145,259,000 for fiscal year 1987 to cover the subsidy cost of new direct loans obligated by the Bank in that fiscal year. Any amounts appropriated under this paragraph shall be permanent additions to the capital and reserves of the Bank.

(b) After January 4, 1975, the Bank shall not approve any loans or financial guarantees, or combination thereof, in connection with exports to the Union of Soviet Socialist Republics in an aggregate amount in excess of \$300,000,000. No such loan or financial guarantee, or combination thereof, shall be for the purchase, lease, or procurement of any product or service for production (including processing and distribution) of fossil fuel energy resources. Not more than \$40,000,000 of such aggregate amount shall be for the purchase, lease, or procurement of any product or service which involves research or exploration of fossil fuel energy resources. The President may establish a limitation in excess of \$300,000,000 if the President determines that such higher limitation is in the national interest and if the President reports such determination to the Congress together with the reasons therefor, including the amount of such proposed increase which would be available for the export of products and services for research, exploration, and production (including processing and distribution) of fossil fuel energy resources in the Union of Soviet Socialist Republics, and if, after receipt of such report together with the reasons, the Congress adopts a concurrent resolution approving such determination.

(c)(1) Not less than 0.025 percent of the loan authority of the Bank in any fiscal year shall be available only for solar and renewable energy loans.

(2) The President of the Bank may waive the requirements of paragraph (1) if he determines, after June 30 of the fiscal year in question, that the Bank is unlikely to receive during such fiscal year a sufficient number of qualified proposals to exhaust the loan authority made available for solar and renewable energy loans under such paragraph. Any determination by the President of the Bank

under this paragraph shall be promptly transmitted in writing to Congress.

* * * * *

FOREIGN ASSISTANCE ACT OF 1961

AN ACT To promote the foreign policy, security, and general welfare of the United States by assisting peoples of the world in their efforts toward economic development and internal and external security, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as "The Foreign Assistance Act of 1961".

* * * * *

SEC. 234. INVESTMENT INSURANCE AND OTHER PROGRAMS.—The Corporation is hereby authorized to do the following:

* * * * *

(e) SPECIAL ACTIVITIES.—To administer and manage special projects and programs, including programs of financial and advisory support which provide private technical, professional, or managerial assistance in the development of human resources, skills, technology capital savings and intermediate financial and investment institutions and cooperatives *and including the initiation of incentives, grants, and studies for renewable energy and other small business activities.* The funds for these projects and programs may, with the Corporation's concurrence, be transferred to it for such purposes under the authority of section 632(a) or from other sources, public or private. *Administrative funds may not be made available for incentives, grants, and studies for renewable energy and other small business activities.*

* * * * *

SMALL BUSINESS ACT

* * * * *

ADDITIONAL POWERS

SEC. 7. (a) LOANS TO SMALL-BUSINESS CONCERNS; ALLOWABLE PURPOSES; QUALIFIED BUSINESS; RESTRICTIONS AND LIMITATIONS.—The Administration is empowered to the extent and in such amounts as provided in advance in appropriation Acts to make loans for plant acquisition, construction, conversion, or expansion, including the acquisition of land, material, supplies, equipment, and working capital, and to make loans to any qualified small business concern, including those owned by qualified Indian tribes, for purposes of this chapter. Such financings may be made either directly or in cooperation with banks or other financial institutions through agreements to participate on an immediate or deferred (guaranteed) basis. These powers shall be subject, however, to the following restrictions, limitations, and provisions:

* * * * *

[(12) The Administration may provide loans under this subsection to assist any small business concern, including start up, to enable such concern to design architecturally or engineer, manufacture, distribute, market, install, or service energy measures: *Provided, however, That such loan proceeds shall not be used primarily for research and development.*]

(12)(A) *The Administrator may provide loans under this subsection to assist any small business concern, including startup, to enable such concern to design architecturally or engineer, manufacture, distribute, market, install, or service energy measures. Proceeds of loans under this paragraph shall not be used for research and development.*

(B) *Not less than .025 percent of the loan authority provided in any fiscal year under this subsection shall be available only for loans under this paragraph. The Administrator shall include a list of solar and renewable energy loans in an annual report to Congress.*

(C) *The Administrator may waive the requirements of subparagraph (B) if he determines, after June 30 of the fiscal year in question, that the Administrator is unlikely to receive during such fiscal year a sufficient number of qualified proposals to exhaust the loan authority made available for solar and renewable energy loans under such sentence. Any determination under this subparagraph shall be promptly transmitted in writing to Congress.*

* * * * *

[(14) The Administration under this subsection may provide extensions and revolving lines of credit for export purposes to enable small business concerns to develop foreign markets and for preexport financing: *Provided, however, That no such extension or revolving line of credit may be made for a period or periods exceeding eighteen months. A bank or participating lending institution may establish the rate of interest on extensions and revolving lines of credit as may be legal and reasonable.*]

(14) *The Administrator under this subsection may provide extensions and revolving lines of credit for export purposes to enable small business concerns to develop foreign markets and for preexport financing. No such extension or revolving line of credit may be made for a period or periods exceeding 18 months. A bank or participating lending institution may establish the rate of interest in extensions and revolving lines of credit as may be legal and reasonable. The Administrator shall give due consideration to the export potential of solar and renewable energy products in implementing his authorities under this subsection and shall include a list of solar and renewable energy loan guarantees in annual report to the Congress.*

* * * * *

[(1). LOANS TO SMALL BUSINESS CONCERNS FOR SOLAR ENERGY AND ENERGY CONSERVATION MEASURES.—(1) The Administration also is empowered to make loans (either directly or in cooperation with banks or other lending institutions through agreements to

participate on an immediate or deferred basis) as the Administrator may determine to be necessary or appropriate to assist any small business concern in financing plant construction, conversion, expansion (including acquisition of land for such a plant), or start-up, and the acquisition of equipment, facilities, machinery, supplies, or materials to enable such concern to design architecturally or engineer, manufacture, distribute, market, install, or service any of the following energy measures:

[(A) Solar thermal energy equipment which is either of the active type based upon mechanically forced energy transfer or of the passive type based on convective, conductive, or radiant energy transfer or some combination of the these types.

[(B) Photovoltaic cells and related equipment.

[(C) A product or service the primary purpose of which is conservation of energy through devices or techniques which increase the energy efficiency of existing equipment, methods of operation, or systems which use fossil fuels, and which is on the Energy Conservation Measures List of the Secretary of Energy of which the Administrator determines to be consistent with the intent of this subsection.

[(D) Equipment the primary purpose of which is production of energy from wood, biological waste, grain, or other biomass source of energy.

[(E) Equipment the primary purpose of which is industrial cogeneration of energy, district heating, or production of energy from industrial waste.

[(F) Hydroelectric power equipment.

[(G) Wind energy conversion equipment.

[(H) Engineering, architectural, consulting, or other professional services which are necessary or appropriate to aid citizens in using any of the measures described in subparagraphs (A) through (G).

Proceeds of loans under this subsection shall not be used primarily for research and development.

[(2) No loan shall be made under this subsection if the total amount outstanding and committed (by participation or otherwise) to the borrower from the business loan and investment fund established by this chapter would exceed \$500,000. No loan made or effected under this subsection directly or in cooperation with banks or other lending institutions through agreements to participate on an immediate basis shall exceed \$350,000.

[(3) No financial assistance shall be extended pursuant to this subsection unless the financial assistance applied for is not otherwise available on reasonable terms from non-Federal sources.

[(4) No immediate participation may be purchased unless it is shown that a deferred participation is not available; and no loan may be made unless it is shown that a participation is not available.

[(5) In agreements to participate in loans on a deferred basis under this subsection, the Administration's participation shall not be in excess of 90 per centum of the balance of the loan outstanding at the time of disbursement.

[(6) The Administration's share of any loan made under this subsection shall bear interest at the same rate as loans made under

subsection (a) of this section. The maximum terms of any such loan, including extensions and renewals, may not exceed fifteen years.

[(7) All loans made under this subsection shall be of such sound value as reasonably to assure repayment, recognizing that greater risk may be associated with loans made to business concerns in this field: *Provided*, That factors in determining "sound value" shall include, but not be limited to, quality of the product or service; technical qualifications of the applicant or his employees; sales projections; and the financial status of the business concern: *Provided further*, That such status need not be as sound as that required for loans under subsection (a) of this section.

[(8)(A) The Administration, after consultation with the Department of Energy and other Federal departments and agencies as the Administrator deems appropriate, shall publish in the Federal Register for public comment not later than sixty days after July 4, 1978, proposed regulations to carry out the provisions of this subsection. The Administration shall make all reasonable efforts to solicit comments from small businesses and shall take into consideration comments submitted regarding such proposed regulations.

[(B) The administration shall publish final regulations under this subsection not later than one hundred and eighty days after July 4, 1978.

[(9) It is the intent of Congress that the paperwork burden and regulatory impact on applicants under this subsection shall be minimized, and that to the maximum extent practicable, the Administrator may rely upon consultation with the Department of Energy and other agencies, upon paid consultants, and upon voluntary public submissions of information to obtain market data, industry sales projections, energy savings, and other economic information needed to carry out the provisions of paragraph (1) (D) and (E). Nothing in this subsection shall be construed as precluding the Administrator from using any of his lawful powers to obtain information from applicants.]